Consider a virtual memory system with two processes. **Process 1** consists of 8 words (*a* through *h*) and **Process 2** has 8 words (*A* through *H*). The physical memory consists of 16 words and the page size is four words.

(A) Show the contents of the 4 pages of the physical memory based on the given information.

Process P1

Virtual Address	Contents
0	a
1	b
2	c
3	d
4	e
5	f
6	g
7	h

Page Table for P1

Virtual Page	Physical Page
0	3
1	0

Process P2

Virtual Address	Contents
0	A
1	B
2	C
3	D
4	E
5	F
6	G
7	H

Page Table for P2

Virtual Page	Physical Page
0	1
1	2

Physical Memory

Physical Address	Contents
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

(B) Suppose the process P1 and P2 are the only processes running on the system, will P1 or P2 ever have a page fault on memory accesses? Explain.

(C) Suppose the Physical memory was only 12 words (3 pages) instead of 16 words (4 pages). Would a page fault be possible if both P1 and P2 are running? Explain.

(D) Fill in the ***Physical Address* column** by translating the Virtual address to the Physical address. Fill in the ***Virtual Address* column** by translating from the Physical address to Virtual address.

Process		Virtual Address	*Physical Address*		Physical Address	*Virtual Address*
P1		2			13	
P2		2			5	